Verbally-Governed and Event-Governed Behavior

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A number of statements prescribe behavior: apothegms, maxims, proverbs, instructions, and so on. These differing guides to conduct present varieties of the dictionary definition of "rules." The term "rules" thus defines a category of language usage. Such a term, and its derivative, "rule-governed," does not address a controlling relation in the analysis of verbal behavior. The prevailing confounding of a category of language with a category of verbal behavior appears related to a lack of understanding as to what distinguishes verbal behavior from other behavior. Verbal behavior is a behavior-behavior relation in which events are contacted through the mediation of another organism's behavior specifically shaped for such mediation by a verbal community. It contrasts with behavior that contacts events directly, and shaped directly by the features of those events. Thus we may distinguish between two large classes of behavior by whether it is behavior controlled by events, or behavior controlled verbally. However, the functional controls operative with both classes of behavior do not differ.

The current conventional treatment of rules accepts the presumption that there is a subset of verbal behavior, represented by maxims, proverbs, apothegms, instructions, and other guides to conduct, that deserves a special analysis. The presumption is not correct. The subset is not of verbal behavior, but one of language usage, and perhaps deserves a category there, alongside those categories of nouns, propositions, sentences, and other linguistic types. Nothing in that language subset justifies a new category of verbal behavior that would be called "rule-governed behavior," and that would stand alongside the current categories of tacts, mands, and the rest.

The literature on rules confounds and confuses the theoretical issues more than it clarifies them. The problem resides with the term "rules," or more accurately, "rule-governed." It never should have been coined. Skinner probably wishes he never had done so (Skinner, in press). The term has not only led to a misguided analysis, but one away from the behaviorological formulation of verbal behavior. Slowly but surely a cognitive interpretation is given to so-called "rule-governed behavior." Even pigeons are now said to formulate rules. But so-called "rule-governed behavior" does not address a verbal relation outside of those already mentioned in our analysis of verbal behavior.

Why the confusion? Any answer simply speculates. But it appears as if the behaviorological analysis of verbal behavior, thirty years after its inception, still is not well understood. People can recite well enough the basic categories into which Skinner (1957, in *Verbal Behavior*,) sorts out the differing controlling relations of verbal behavior. But the central heart of the book—why verbal behavior deserves a special analysis—seems yet to elude those who at least glance at what a functional analysis of verbal behavior implies. What verbal behavior shares with other behavior, and how it idiosyncratically differs, needs to be spelled out in order to understand why "rule-governed behavior" is a conceptual will-of-the-wisp.

VERBAL BEHAVIOR:
## ITS UNIQUE CHARACTERISTIC, AND ITS SHARED ONES

Four critical characteristics of verbal behavior underlie its behaviorological analysis. It is mediated, selected by consequences, nonautonomous, and relational. The latter three characteristics it shares with all behavior. The first sets it apart.

*Its Unique Characteristic: Mediated Behavior*

Organisms either directly contact their physical, biological, and behavioral environments, or have that contact mediated.

In direct contact, the movements of an organism and its parts directly effect changes in its immediate world. An organism grasps a door knob and pushes, and a door opens. It approaches a water faucet, opens a spigot, and drinks water. It spots a ripe apple on a tree, and pulls and picks the apple. It smells a foul odor, and avoids rotten meat. It grasps a wasp, is stung, and releases it. The examples are as numerous as the everyday interaction of organisms with their world. We may portray such direct contact, in its simplest fashion, as follows:

organism){ environment   (1)
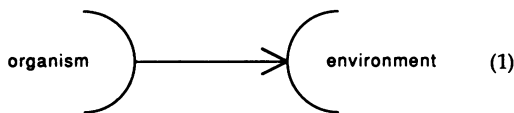
In mediated contact, the behavior of a second organism (or organisms) intervenes or stands between the behavior of a first organism and an environment. We may portray such mediation as follows:

organism) mediating agency { environment   (2)
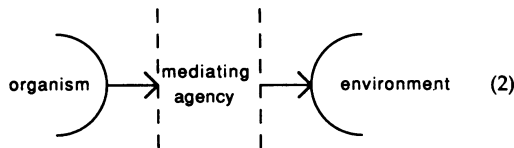
The first organism contacts the mediating agency. The mediating agency, a second organism or group of organisms—a verbal community in the case of the human organism—contacts the environment. The result of that contact, the response of the mediating agency, determines in large measure the behavior of the first organism to the environment.

The mediation relationship is a common one in nature. An animal suddenly hears all others become quiet, and it too freezes into immobility. A prairie dog yelps a warning, and the rest of the colony, without having seen or heard the source of the danger, rushes to shelter. A boy cries "wolf," and the villagers, without having seen the wolf, take up arms.

The first example typifies the usual occur-

ENVIRONMENT

organism){ mediating agency { environment contact through (3) mediating agency
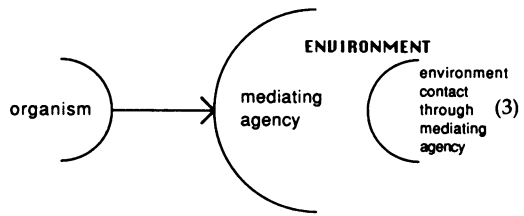
rence of an organism behaving due to an unknown event when that event affects the behavior of another organism. The second and third examples illustrate social behavior—organisms acting in concert, with consequent advantage to the group. The third example additionally portrays that special social behavior in the human organism called "verbal behavior."

Intraverbal Behavior—sequelic, codic, duplic.[1] We easily observe the mediational effect in intraverbal behavior, that is, in verbal behavior under the control of verbal stimuli. An individual learns to talk and write and gesture about many things he or she never encounters. A civil war buff recalls the Battle of Bull Run without having heard the roar or smelled the smoke of that battle. A paleontologist presents a lecture on dinosaurs without having encountered one. A geologist describes a volcanic explosion without having seen a volcano. A typical scenario for the geologist's mediated behavior might be where an observer describes in writing a volcanic explosion she witnesses; the geologist reads about that explosion, and later lectures on it.

The advantage is obvious in talking about events we have never encountered. We gain from the entire community's contact with the world around it. Most of what we know of the world, we know through others. We do not directly experience it. That advantage, however, carries a cost: such talk easily leads to discussions of elves, leprechauns, gods on Mount Olympus, gods elsewhere, ghosts in the machine, and other such reifications as if they were real—as if the speaker were directly describing contacts with events. Those listening then react to reifications as they do to reality.
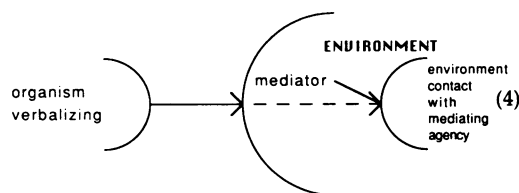
Reactions to fictional events as if they were

1. For a discussion of these verbal behavior categories, which follow but differ slightly from Skinner's (1957), see Vargas (1986).

actual events lead some analysts to confound words with objects, to argue that we react to words as we do to objects. But words about events are not the events themselves. We do not behave to words as we do to objects.[2] More accurately stated, we do not behave to verbal behavior about events as we do to the events themselves. We do not react to the word "elephant" as we do to the elephant. We do not hunt the word, ride it, or feed it peanuts. We might, however, talk about doing all three. Such talk differs from the doing (though emotional concomitants might to some degree be similar); and the controls over doing and talking considerably differ.

Extraverbal Behavior—the Mand. We can also observe clearly in the verbal relation called "the mand," the difference between behavior that directly contacts events, and behavior with respect to those events mediated. One may reach for the butter at the dinner table or request someone to pass the butter. One may turn down the volume of the radio or demand from whomever is playing it to lower it. One may reach for a glass of water or ask someone to get it for him. In short, action can be direct with respect to what someone wants, or someone else's behavior can mediate that want.

Extraverbal Behavior—the Tact. The "tact" relation presents a slightly more complex picture of behavior mediated through others. It would appear that the person verbalizing directly contacts his environment. He does. But the verbal behavior of issue here initially occurs only with the intervention or mediation of another person's behavior. In the basic tact relation, the person contacts a current event, verbally responds to it, and a mediator presents a generalized reinforcer. However, once the verbal relation is in place, changes begin to occur in it according to well-known processes.

2. This distinction is not a new one. For some time it has been so commonly made by logicians and philosophers that they even make it in their "popular" writing. Grnbaum (1987/1988, Winter, p. 23) provides an interesting example in commenting on the "...orthodox Jewish practice of showing reverence by omitting the letter 'o' in the spelling of 'God.' ...(S)o doing...displays the inveterate semantic confusion between a name and its object...." But emotional reactions that are much the same may occur to words and objects if these are paired together. Clinicians take advantage of this fact. See, for example, Cautela and Kearney, in press, and Hekmat, 1972.

(1) *With Mediating Agency.* A specific verbal response would not be emitted for the first time without a mediator or mediating agency who pairs a verbal utterance with an object or an event. A father and daughter walk along the beach. They spot a sea shell. As his daughter picks it up, the father says, "That's a queen conch." A little further along the walk, his daughter says, "Oh, dad, here's another queen conch." The father says, "That's right." A teacher in an electronics class states, "We reviewed the parts of a computer this morning. When I point to the part, state its name." She holds up a part. "Class," she says. The class responds, "CPU." The teacher then says, "Good." (Note that both the person verbalizing and the person mediating must be in the presence, that is, in current stimulus contact, of the object, or the event, tacted. If *not* under immediate stimulus control of the object or the event, then it is *not* a tact. It is "reference." Typically a referent is controlled by other verbal stimuli. The language category of reference is either an autoclitic or intraverbal relation. People often refer to objects and events that they never contacted, and that may never have existed. Skinner's distinction between tacts and referents clarifies a number of epistemological problems on whether the events someone may talk about actually exist. [See Skinner, 1957, chapter 5, especially pages 114-129.])

Once in place, and in the presence of the object or event that now evokes the verbal utterance, the tact may be emitted an unspecified number of times without the delivery of generalized reinforcement. The daughter may spot another queen conch and say, "Here's another queen conch, daddy." But the father may be preoccupied and not respond. The daughter may continue to say, "Queen conch, daddy, queen conch, queen conch." The familiar effects of schedules of reinforcement operate with verbal behavior as they do with any other behavior. Some-

times reinforcement is not forthcoming either through happenstance or by design. Much verbal behavior, once in place, continues to be emitted without reinforcement. How long such verbal behavior would be emitted would depend on past contingency schedules, and on contextual stimulus features similar to those in the prior situation in which the verbal response was reinforced.

(2) *Without a Mediating Agency.* Once in place through the effects of a mediating agency, a given form of a verbal response (for example, "CPU") may be emitted in the absence of a mediating agency. The next time the student sees a CPU, he may say, "Here's the CPU the teacher was talking about." Furthermore, a tact may also be emitted in the presence of objects and events with which the mediating agency had no prior contact. The process at work here is induction.

In induction (or as typically called, generalization), a verbal response under control of a prior stimulus situation is emitted in a new situation due to stimulus properties that overlap with the properties of the prior situation. A mediator typically reinforces (or punishes) the new verbal response, though not necessarily on its first occurrence. A person is shown a picture, "Nighthawks," and told it is by Edward Hopper. Later that same person comes across another picture by Hopper about which she has not been informed, and she says, "Oh, this one is by Hopper, also." The art teacher, if present, confirms it by saying, "Yes, that's right." But

the similarity of the stimulus features of the new situation may be sufficiently alike to the prior one so that the art student would say to herself, or to anyone else, that she is sure it is by Hopper.

There is an issue of vital significance here in the analysis of verbal behavior. The process of induction provides the mechanism for verbal responses to be made in circumstances and to stimulus events for which there was no specific training. This latter situation is the conceptual bugaboo psycholinguists raise with the behaviorological position: How do you account for verbal behavior not previously taught? The psycholinguistic answer is that a set of cognitive mechanisms generate an infinity of sentences never previously learned.

The behaviorological answer given to the question that psycholinguists raised has been that induction of common physical properties accounted for emergent verbal behavior not specifically trained. Physical induction did cover a certain number of cases such as, for example, extended tact behavior. But what if there were no physical stimulus properties that overlapped with the former shaping situation?

Formerly, in the domain of emitted verbal behavior that was not taught, the procedures responsible for the induction of verbal behavior covered a certain number of cases: those where there were some overlapping of physical properties. Stimulus equivalence[3] extends our explanation further with respect

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3. Stimuli are functionally equivalent or belong to the same stimulus set (or class) if the same response is made to them (Goldiamond, 1962). Such equivalence of physically dissimilar stimuli can be specifically trained by a procedure in which all the members of one stimulus set are made equivalent to all the members of another stimulus set by sharing at least one common member. Imagine a stimulus set, I, consisting of two stimuli, A, and B, that are equivalent to each other. Imagine a second stimulus set, II, consisting of two stimuli, A, and C, that are equivalent to each other. Under certain training procedures that guarantee identity and symmetry of the stimuli involved in the two stimulus sets I and II, a third set, III, emerges without specific training in which B and C, are equivalent, that is, this set controls responses that the paired relations in stimulus sets I and II controlled. This results in a larger stimulus set, 1, in which A, B, and C, are equivalent. None of the stimuli may share common physical properties. For example, when a name for a picture is orally stated (let's call the dictated name "A"), pictures are presented (let's call the picture "B"), and an individual taught to select the correct name ("A") for the correct picture ("B"). There may be a number

of such names and pictures, each matched with the other. In a separate training session, the individual may also have pictures ("B") presented, and taught to select a written name ("C") for each. The individual is then tested to ascertain whether when "A" is dictated, "C," the written name, is selected. Such transitivity occurs between "A" (the oral name) and "C" (the written name) without the individual taught to match the printed name to the oral name if all prior pairings were reflexive and symmetric, including "A" and "C" (Sidman & Tailby, 1982). In short, verbal behavior, not previously in the individual's repertoire, is emitted without specific training of it. (Currently, the exact nature of the controls responsible for this extension of the induction process is unclear. [See the discussion in Sidman & Tailby, 1982; Sidman & Cresson, 1973; Spradlin, Cotter, & Baxley, 1973]. Response transfer is possible, but unlikely when there is no variation in responses. It appears that induction takes place along the lines of the functional relations between the properties of the stimuli involved, rather than just between the properties themselves, as no physical overlap of those properties is present.)

to how verbal behavior not specifically shaped may come to be emitted. The procedures now cover those instances in which stimuli that physically do not resemble each other control the emission of verbal behavior. Instead of inferred mechanisms, we directly observe the process of the emission of untrained verbal behavior. Furthermore, we can carry-out procedures to put that process into place, and produce emergent verbal behavior.

The prior summary of the basic verbal relations does no more than to point out why Skinner (1957, p. 224) defines verbal behavior as behavior reinforced through the mediation of another person specifically trained to do so by a verbal community. The mediational aspect of verbal behavior forces an analysis that must take such mediating activity into account. To ignore the mediational quality of this behavior leads to a cognitivizing of the analysis of verbal behavior since mediative relations are hypothesized as a set of special operations in the mind of the speaker or the listener that are responsible for either the listener's or speaker's performance. Such a hypothesis ignores the contingency relations between the behaviors of verbalizing and mediating, and ignores behaviorological parameters, such as deprivation, that enter into those relations.

We do not deal here with merely a theoretical quibble. A behaviorological analysis of verbal behavior carries practical implications. Take, for example, the term "receptive" in the developmentally disabled literature. Such a term implies that language, and thus by extension, verbal behavior, is a process by which we communicate with each other. It assumes a "communication" that the mediator (generally referred to as "the listener") "receives" and "understands." This then calls for an analysis of what now is construed as language performance in the listener— how he receives the information, and how he comes to understand it. It thus takes us away from the listener's mediative function, and transforms the listener into a speaker. Not only is such an analysis unnecessary, it is completely wrong from our theoretical formulation. The term "receptive" shifts the analysis away from the purely mediative function of the individual intervening between an environment (however defined),

and the person verbalizing (however done). The term that should be used in the developmentally disabled field (or for that matter in any practical application, or in any theoretical analysis, of verbal behavior) is "mediative." "Mediative behavior" maintains what is connoted by a behaviorological analysis of verbal behavior. Practical applications like Sundberg's (1987) that keep clear the mediative function in the verbal relation result in radically different training programs than those designed from traditional psychological assumptions.

Shared Characteristics: Non-Mediated Behavior

The other three characteristics of verbal behavior is that it is (1) selected; (2) non-autonomous; and (3) relational. It shares these characteristics with all other behavior, that is, with behavior that directly contacts its environment.

Selected

"Selected" simply means that the dynamic principle of change is "selection by consequences." As with behavior that directly contacts the environment, verbal behavior is changed by the consequences produced by it. A person twists a doorknob to open a door, and the door opens. Such an outcome increases the probability of that same behavior in the same or similar situations. A person asks someone to open the door, the other person (the mediator) opens it, and that outcome increases the probability of emitting that verbal behavior again.

Mediational behavior must have strong adaptive advantages. It is quite prevalent in a variety of animal species. It is exhibited through a variety of social behaviors, phylogenetically controlled and shaped through natural selection. The individual organism is predisposed to mediate in certain ways by the visual, aural, and gestural cues of its "biological community." E. O. Wilson provides many examples in his book Sociobiology (1975). The following are a few:

> (L)arger flocking birds that cannot take flight easily have evolved special signals to induce simultaneous departures by members of the flock. Mallards "talk" back and forth with rising intensity while moving their beaks in what appears to be a ritualized flight inten-

tion movement....Other kinds of birds use auditory as well as visual signals. Cockatoos emit a loud shriek. Domestic pigeons and their wild rock dove ancestors (Columbia livia) clap their wings loudly, with the duration of the signal indicating approximately how long the bird intends to fly. For short flights, no signal at all is given. A long journey is encoded by a prolonged bout of clapping before take-off. ...(N)ote the remarkable similarity that exists between this graded signal and the straight run of the honeybee waggle dance, which increases in duration with the distance from the hive to the target (p. 213).

Interestingly, Wilson's definition of communication comes quite close to Skinner's definition of verbal behavior. Wilson (1975, p. 176) states, ''Biological communication is the action on the part of one organism (or cell) that alters the probability pattern of behavior in another organism (or cell) in a fashion adaptive to either one of the participants. By adaptive I mean that the signaling, or the response, or both, have been genetically programmed to some extent by natural selection. Communication is neither the signal by itself nor the response; it is instead the relation between the two.'' Their definitions are not identical but they agree on these major points: (1) that verbal behavior or communicative behavior is behavior that alters the probability of another organism's behavior; (2) it is a relation between two sets of behaviors (cf. Skinner [1957, p. 2], ''The behaviors of speaker and listener taken together compose...a total verbal episode.''); and (3) the prime mechanism through which such probability change occurs is selection by consequences, though the agency of such selection differs as Wilson emphasizes natural selection and Skinner cultural selection.

Wilson's analysis of communication, however, lacks the central point of Skinner's analysis of verbal behavior: that it is mediated. This results in a number of differences in the analysis of behavioral interactions, primarily in the analysis of the receiver's behavior, and even, from the behaviorological point of view, whether a presumed communication interaction should be construed as verbal behavior. Though Wilson (1975,

p. 176) does say, despite his being quite influenced by the psycholinguistic tradition, ''...in the study of animal behavior no operational criteria has yet been developed other than the change in patterns of overt behavior, and it would be a retreat into mysticism to try to add mental criteria.''
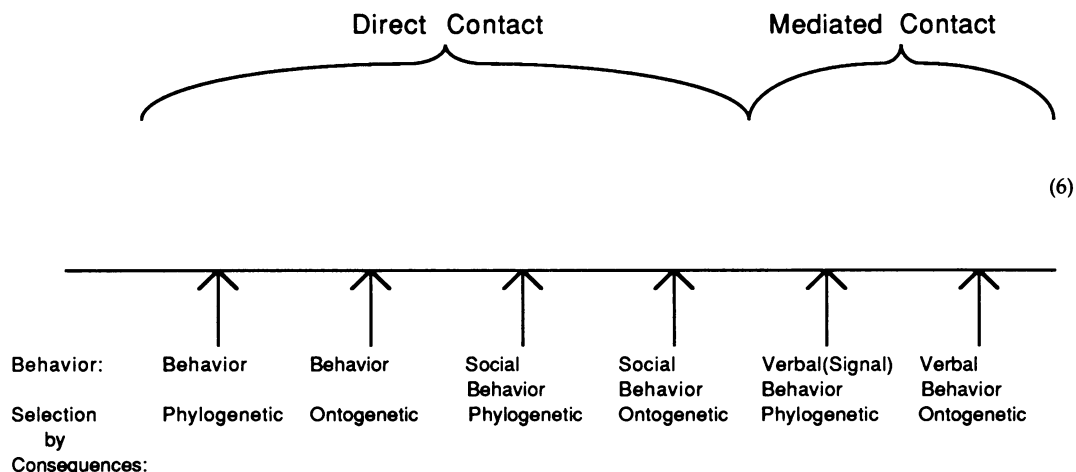
The prior examples by Wilson would appear to be verbal behavior. The mediative behavior, however, is not shaped by ontogenetic contingencies, but by phylogenetic ones. We might define this apparent verbal behavior as behavior mediated through another organism shaped through natural selection; an organism that is a member of a verbal community—or perhaps better stated, a signaling community—defined by its species characteristics. It lies at one end of a continuum (see Diagram 5) in the analysis of verbal behavior.
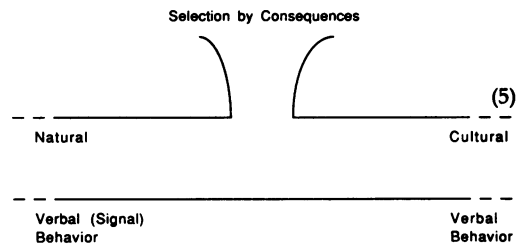
Such a continuum is part of a larger one (see Diagram 6) where all behavior is shaped by the selection of consequences. The adaptive power of mediated behavior appears as prevalent in other species as it does in the human one. The ratio of phylogenetic to ontogenetic controls over this behavior simply differs. Each type of behavior is a subset of the other: verbal behavior is a subset of social behavior, and social behavior is a subset of behavior.

Nonautonomous

As with any kind of behavior, the organism is simply a locus at which the variables responsible for verbal behavior have their play. Unfortunately, we typically state that the organism is an agent for whatever action it takes. This is especially the case when we speak of verbal behavior. Our language—the typically reinforced utterances of our verbal community—impells us to describe action that way. But no agent is responsible as creator. We can only point to a nexus of

Direct Contact　　　　　　Mediated Contact

(6)

Behavior: Selection by Consequences:	Behavior Phylogenetic	Behavior Ontogenetic	Social Behavior Phylogenetic	Social Behavior Ontogenetic	Verbal(Signal) Behavior Phylogenetic	Verbal Behavior Ontogenetic

causality relations. The organism does not originate verbal behavior as "speaker" in any of its modes, whether writing, talking, or gesturing. The organism drops out of the equation in the analysis of the variables responsible for verbal behavior and its characteristics, except as the place at which verbal behavior occurs due to certain characteristics of the organism (characteristics that may eventually be shared by the non-organic entity, the computer [Vargas, in press]). Any organism at which verbal behavior is possible presents a point of convenience for the analysis.

We note two place relations: the place of emission, and the place of mediation. A particular topography of behavior, called "verbal behavior" because it is (and has been) mediated, is emitted at a locality traditionally called a "speaker." This behavior is reinforced (and punished) not by an environment to which it refers, but by social behavior that mediates the contact of verbal behavior with its environment. The locality of the behavior that mediates has traditionally been called a "listener."

The analysis of verbal behavior properly concentrates on the behavior being mediated. It is this set of separate relations with its special controls that calls for a separate and special analysis. The behavior that is mediating is already under analysis within the framework of the analysis of behavior in general. If an analysis construes the mediating behavior as itself mediated, then such a construction changes the "mediating behavior" to verbal behavior. The focus of

analysis shifts to that of verbal behavior. Note that if it is argued that mediative behavior is also verbal behavior, then that dispenses with the special analysis we make of verbal behavior as behavior that is verbal because it is mediated.

If the distinction between the locality where verbalizing occurs and that one where mediating takes place is not maintained, then the lack of the distinction results in the attempt to make a separate analysis of mediating behavior and give it the characteristics of verbalizing behavior. Psychologists make a great deal of the cognitions of the listener, and in the behavioral psychology community there seems to be some enthusiasm for a separate analysis of the so-called "listener's" behavior, an analysis that credits that so-called listener with "understanding," and other such states defined apart from the speaker's role. But if the analysis takes place within the behaviorological theory of verbal behavior, then that "listener" is simply a "speaker," when the controlling relations at that locality are those of verbal behavior. We have simply shifted the focus of the locality of the variables we are addressing with respect to the behavior of concern.

It is important to keep in mind the nonautonomous nature of the behavior of the parties we choose for the current focus of our analysis for it underlines the fact that it is behavior that our analysis addresses. In a very real sense, individuals verbalizing and mediating are not our concern here, just as pigeons and rats are not the concern of

experimenters analyzing behavioral principles in the laboratory, and sweet peas and fruit flies are not the concern of geneticists searching for the laws of genetics. We are not dealing with people. We are dealing with behavior, and with systems of variables—the mutual effects of response and stimulus interactions.

Unfortunately, it is easy to reify the loci of verbal behavior and give special status to them—the traditionally called "speaker" and "listener"—for the ubiquitous verbal community called "our culture" has shaped a complex of connotations to those two terms, not least is that one, the speaker, communicates and the other, the listener, understands. For that reason, when analyzing verbal behavior, the terms "speaker" and "listener" should no longer be used. Other terms are more technically descriptive. "Verbalizer" and "mediator" more accurately describe both the subject matter, and the relations addressed. We verbalize in a variety of modes, not only speaking, but writing and gesturing. And of course, the critical action of the mediator is not that he, or she, has heard (or seen or felt) what was verbalized, but that she or he mediates that behavior either directly, or in reference, to an environmental feature, or with respect to the form of the verbal behavior uttered.

Relational

The last characteristic verbal behavior shares with other behavior is that it is relational, or rather the analysis is. Behavior analysis is a misleading label. We do not analyze behavior. We analyze *behavioral relations*. (A position adumbrated by Skinner as early as his 1931 paper, "The concept of the reflex in the description of behavior." in *Cumulative Record* [1972, 3rd. ed]; see especially p. 448.) We capture the analysis of these behavioral relations in the phrase "contingencies of reinforcement."

The phrase points to an important distinction between behaviorology and other behavioral sciences. All of the behavioral sciences take behavior, in one sense or another, as their subject matter. Anthropologists, economists, psychologists, political scientists, sociologists, and other behavioral scientists study behavior. They, by and large, concern themselves with ontogenetic variables. Ethologists, naturalists, and socio-

biologists study behavior. They, by and large, concern themselves with phylogenetic variables. But whether the variables of concern are phylogenetic or ontogenetic, the subject matter is behavior—the interaction of organisms with their environments. Such commonality of subject matter poses a lack of distinction between behaviorology and the other behavioral sciences with respect to subject matter. What does distinguish behaviorologists is our theoretical approach to the subject matter. This approach is encapsulated in our analysis of the contingent relations behavior has with events. The contingency analysis of behavioral relations defines our epistemology, determines our methodology, and dictates our terminology.

The topography of a behavioral event, if not a trivial event is simply a starting one. We understand the topography of a behavioral event only in relation to other events. A response, or a group of responses, has a physical meaning only as movement. A response obtains a behaviorological meaning when we analyze it as a member of a class of responses functionally defined by a common effect; what we call an operant. We interpret physical and biological events from within the contingency relations described by behaviorological theory. (By theory is meant the inductive accumulation of behaviorological principles—slow but sure.) A hit in the arm is a gesture of hostility or a gesture of camaraderie. Calling someone a behaviorist denotes either contempt or respect. And so on. Behavioral topographies gain significance only in their relations to controlling circumstances.

Nowhere is such relational analysis more evident than in verbal behavior. Skinner (1957, p. 186) illustrates the different meanings of the word "fire" as follows: "*Fire* may be (1) a mand to a firing squad, (2) a tact to a conflagration, (3) an intraverbal response to the stimulus Ready, aim..., or (4) an echoic or (5) textual response to appropriate verbal stimuli." The word "star" provides a second example. Such a term has different meanings when said by an astronomer looking at the night sky, by a press agent touting a Hollywood movie, by a child drawing a five-pointed object, and so on. But any term chosen at random will do. Take the term "apple" for example. It may be a tact of a fruit or a machine depending on which is present.

It may be a mand if one wishes to eat it or to type upon it. If controlled by a prior verbal stimulus, it may be a duplic, codic, or sequelic response. The word, as a physical event, measured by the dimensional system of physics (for example, discrete marks when typed or acoustical properties when spoken), has no behaviorological significance. Only with respect to the controlling relations denoted for an utterance, does it become a significant behavioral event.

What is true for a word is true for a group of words. A similar analysis applies to that group of words called a "rule." There are groups of statements, that due to their formal characteristics, are classified traditionally as apothegms, maxims, instructions, proverbs, and so on. These are lumped together as rules—guides for conduct. But what does this "analysis," or at best, classification system, have to do with a functional analysis? What are the controls over this verbal behavior as it is emitted? What are the relations such utterances have to other events? Are these verbal statements under the control of establishing operations? Under the control of prior discriminative stimuli? Or other verbal stimuli? These questions address functional controls. But unfortunately, a great deal of effort currently takes place to define the essential characteristic of these statements by what they apparently do, or attempt to do. Such effort succeeds only in treating them as linguistic not as behaviorological phenomena.

Traditional psycholinguists and grammarians sort language, the linguistic topographies (or reinforcing practices) of a verbal community, into categories such as nouns and verbs, and the like. This analysis proceeds by classifying verbal utterances as sentences and its parts as words, and classifying those parts by their roles in a sentence and by what they refer to. "What does it do?" is the central question asked by the linguist or grammarian of a word or group of words, for language to a linguist is a tool speakers and listeners use. Note the same question asked of those verbal utterances called "rules." Various answers are given. These verbal utterances called rules specify discriminative stimuli, or direct the listener, or enhance the reinforcing property of formerly neutral stimuli, and so forth. Thus, linguistic analysis results in a category of ver-

bal utterances classified by their use by a speaker. Behaviorologists would engage in such an analysis if we took sentences that we defined as mands and classified them by whether they told the mediator to behave as we ask: to do something, or to get something, or to avoid something—all of which, by the way, so-called rules presumably do. We would also engage in such an analysis if we took sentences that we defined as tacts and classified them by the sorts of features of the world they discriminated—another presumed characteristic of rules.

The entire effort concerning so-called rules is misguided. As Lee (1981, p. 35) points out, "...the psychological referent of 'rule' in itself guarantees the irrelevance of this concept to the analysis of behavior...." Depending on the kinds of controls over verbal utterances, verbal relations may be extraverbal such as mands and tacts, or intraverbal, such as codics, duplics, and sequelics, or they may be autoclitic. Formal grammatical categories such as nouns, verbs, and adjectives may be any of these relations. But nouns, and verbs, and other linguistic categories can be explained by referring to properties of verbal utterances within another scheme of analysis—a psychological one. The term "rules," also, is a formal classification of utterances within such a psychological analysis. And within such a psychological scheme of analysis the question is easily raised as to what sorts of utterances rules are. Like prior pioneers in this endeavor, those searching for the answer would discover that the immediate answers would not be satisfactory. Those inquiring within this framework would then find they would have to go to fundamentals and ask, "What are words?" and finally "What are sentences—what do they do?" They would receive a great deal of help, an extensive literature in traditional linguistics and current psycholinguistics ready to guide their efforts. Eventually they would find that what these statements are is determined by what the speaker "intends" by them, and by what the listener "understands" of them.

There is no mystery as to what any of these verbal utterances are, from nouns to rules. Depending on the variables that control them, they are one of the verbal relations described by our functional analysis of verbal behavior. The noun "apple" may be a tact,

or a mand, or any one of the verbal relations so far described. We can analyze any rule in like fashion. The rule "A stitch in time saves nine" may be a tact—one observes someone taking an action that prevents a great deal of effort later on; or a mand—"take action early;" or a codic—one reads it from a text; or any other verbal relation. We can pursue a similar analysis for so-called "instructions," for example, an "instruction" on opening a door is a mand, when the verbalizer wants the mediator to open the door, a tact when both verbalizer and mediator face the door and the verbalizer demonstrates how it opens, an intraverbal of some sort when uttered by an actor in a play, and so on. If we specify the variables controlling the verbal behavior, we know what verbal relation any utterance we call a "rule" is.

CONCLUSION

There is nothing special about the set of utterances topographically defined as "rules"—anymore than there is about those utterances called "nouns," or called "exclamations," "questions," and "interjections," or more generally called "sentences." The term "rule" was an inappropriate one, for the phrase "rule-governed" behavior was inappropriate. What was meant, and should be meant, and must be meant, in order to avoid theoretical confusion, is "verbally-governed" behavior. Skinner (in press) himself has said as much, "Rule-governed is not a very satisfactory term."
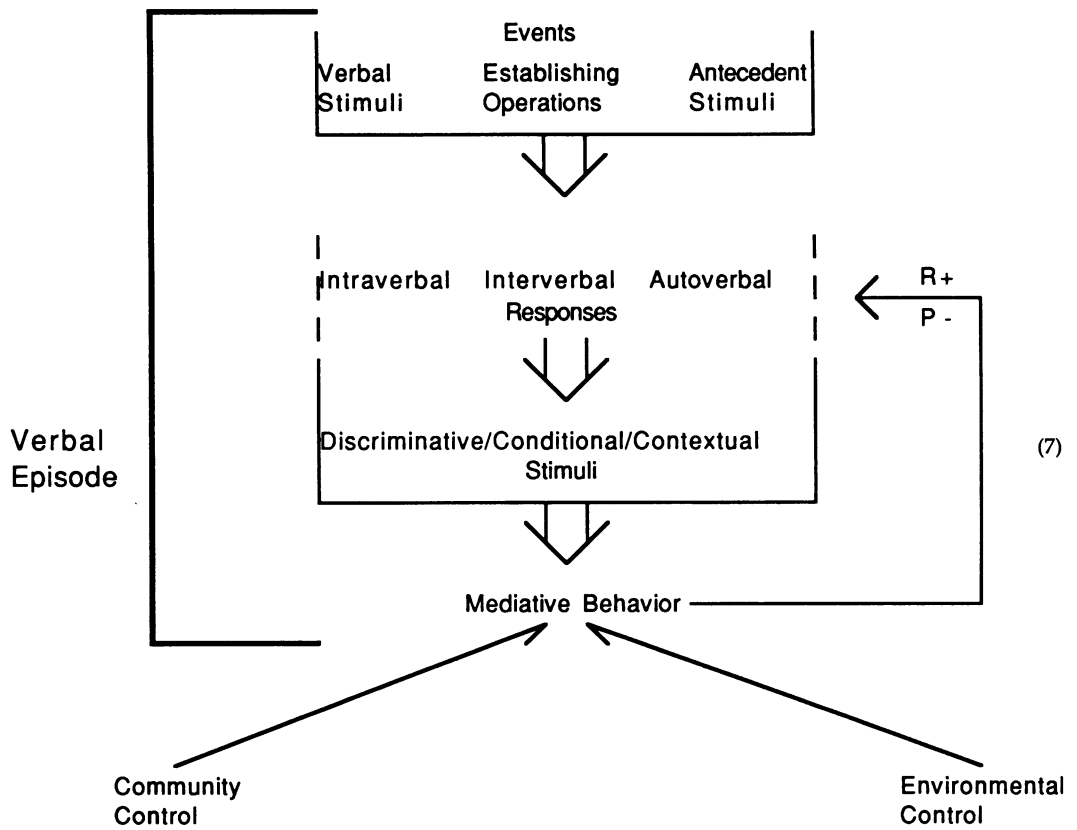
Skinner discussed the contrast between verbally-governed behavior and event-governed behavior under their former rubrics of "rule-governed" and "contingency-shaped," not only to emphasize the difference between the two classes of behavior due to their controlling relations (entirely different behaviors and controls are involved in describing how to drive a car and in actually driving one), but to point out some of the properties associated with each larger class of behavior relations. Such a distinction never meant to imply that there were special and unknown behaviorological laws, heretofore not yet discovered, operating with verbal behavior. For other than its mediational characteristics, verbal behavior shares the commonality of controls of all other behavior described through a functional analysis. Operations establish the

efficacy of postcedent events to reinforce or punish verbal behavior, antecedent events when paired with reinforcers or punishers can evoke or devoke[4] verbal behavior, certain stimulus arrangements increase its probability in circumstances in which no shaping took place, and schedules of reinforcement and punishment determine rates of emission. What are the new principles of the functional analysis of behavior that control and are uniquely pertinent to mediated behavior, but not found in non-mediated behavior? Certainly none have been pointed out that cannot be reduced, transformed, or translated into the principles we now know.

Juliá's (1983) remarks on the tendency to call for special principles in the analysis of verbal behavior are pertinent here:

> An experimental analysis makes a clear distinction between behavior shaped and maintained by direct environmental contingencies and behavior dependent upon instructions, what the subject has to say about the prevailing conditions (inside or outside the laboratory), and the like. Instructions, laws, rules, and so on often have an important place among the discriminative stimuli maximizing effective behavior. They must be understood, however, as the product of an analysis of relevant contingencies: they are state-

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4. An antecedent stimulus can increase the probability of a response. We denote such a relation, when shaped through operant conditioning, as "evoked." The behaviorological term "evoke," is extended, in its technical meaning, from the typical meanings of "evocation" and "evoke." In its various meanings, evocation stands for a literal calling forth or calling out. For example, the Oxford English Dictionary (Compact Edition, p. 911) gives as the definition of evocation, "The action of evoking; a calling forth or out." (Under 5.a, the OED states, "The action of evoking or calling forth into existence or activity;..." and interestingly, under 5.b "With reference to the Platonic theory of recollection...: a calling up of knowledge acquired in a previous existence.") "Evoke" the OED defines as "to call forth; esp. to summon up spirits" and later, "to call (a feeling, faculty, ...) into being or activity." Webster's Third International agrees; but it does have the following under 2 a: "to call forth a response: ELICIT." But an antecedent stimulus can also decrease the probability of a response. "Devoke" would be the appropriate term here, extended technically from the usual meaning of "devocation" and of "devoke" which is "to call down" (Not an exact quote; from the OED, p. 291 and p. 292). Such a term has the further advantage of being obsolete, and with no current connotations; Webster's Third Edition, for example, does not list it.

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                          Events
            Verbal        Establishing      Antecedent
            Stimuli       Operations        Stimuli
                              ⇓

            Intraverbal   Interverbal   Autoverbal        R +
                          Responses                       P -
                              ⇓
Verbal
Episode     Discriminative/Conditional/Contextual                (7)
                          Stimuli
                              ⇓
                    Mediative Behavior


        Community                                   Environmental
        Control                                     Control
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ments about conditions and consequences and they are, therefore, different from those conditions and consequences themselves. So are the behaviors generated in either case. Laboratory research has made a direct analysis of the terms composing such contingencies possible without a deceptive recourse to other dimensional systems. . . .

The special conditioning required for rule-following behavior is a particularly important point to keep in mind in any discussion of linguistic behavior, where "rules" enjoy an unusual prestige. Although we must assume speech to be as lawfully determined as the rest of behavioral repertoires, the assumption that the regularities commonly observed in most verbal activity are of a different, universally rule-determined sort, is clearly misleading and dangerous. (pp. 146-147)

For a study relevant to Juliá's remarks, see Stoddard, Sidman and Brady (1988).

Relations between verbally-governed behavior and event-governed behavior can be complex because in a behaviorological analysis events have no ontological status standing by themselves, but only in relation to other events, specifically only in the functional relations designated. The following diagram (Diagram 7) portrays the relation between verbal behavior and mediative behavior.

Note that mediative behavior is event-governed, unless it in turn is mediated. It is like any other behavior-behavior[5] relation. Behavior, however, to be defined as verbal requires the mediative function. A confusion easily occurs in distinguishing between verbal behavior and mediative behavior since mediative behavior appears to be verbally-governed, that is, under the control of prior verbal stimuli. But it is best not to call those stimuli "verbal" for this latter class of behavior. As said earlier, this mediative

5. Physical or biological or behavioral events, or their combined effects always control behavior. A behavior-behavior relation denotes a controlling relation where both the dependent and independent variables are behavioral. The controlling behavior may be the organism's own behavior or the behavior of a different organism.

behavior in turn would have to be mediated to define it as verbal and thus define those controlling behavioral events as verbal. Let's say a person turns his head to a shout in another language, for example, "hombre." He turns due to the loudness and sharpness of the noise, just as he would to any other sound with those characteristics. The noise, we would say, has no "meaning" for him, even though he may mediate the verbalizer's demand by stopping, and then turning his head. The sound, as stimulus, would not be verbal any more than the sudden bang of an object that fell, or the bark of a dog, or the noise made by an animal. Only if he were a member of the same verbal community, would it be possible to mediate his (the mediator's) behavior. When mediative behavior is controlled by a verbalizer's verbal behavior, those verbal responses may be verbal stimuli if the mediative behavior is part of another succeeding verbal episode. (In a number of social situations, such responses are verbal or become verbal. In conversation, for example, the verbalizer and mediator constantly shift roles. One verbal episode follows another quickly, each party mediating the other's verbal behavior.) Verbal stimuli do not "differ in any particular from other kinds of stimulation" (Skinner, 1957, p. 34). In short, stimuli are defined as verbal only under the special circumstances of a "verbal episode."

An understanding of the dynamic nature of the verbal episode, and that social and individual events may or may not be verbal depending on their functional relations, allows us to fine tune our analysis of "rules," linguistically defined as prescriptions for behavior. Rules may be verbal relations or they may not be. When behavior is mediated, they are verbal. But observers infer from an organism's behavior, the status of a set of controls that for purposes of convenience they wish to call a "rule." The organism itself may have no verbal behavior. It is the observer's verbal behavior that defines the controlling relations in terms appropriate to one of the language categories of the observer's culture. The organism in question does not verbalize a rule. The observer infers from its behavior a certain economy of action that formally resembles that derived from verbally-governed behavior, and so designates that economy of action with the cur-

rently favorite term for it—rule-governed. But such a label only confounds the processes and the effects involved when behavior is controlled by direct contact with events and when it is controlled by having that contact mediated.

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